

CLAIMS

1. A lithographic projection apparatus comprising:
  - a radiation system to supply a projection beam of electromagnetic
  - 5 radiation having a wavelength of 250nm or less;
  - a support structure adapted to support patterning structure which can be used to pattern the projection beam according to a desired pattern;
  - a substrate table to hold a substrate;
  - a projection system to project the patterned beam onto a target portion of the
  - 10 substrate; and
  - a gas supply constructed and arranged to supply a purge gas to a space in said apparatus, said space containing an optical component, wherein said purge gas comprises an oxygen-containing species selected from water, nitrogen oxide and oxygen-containing hydrocarbons.
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2. An apparatus according to claim 1, wherein said purge gas comprises an inert gas, and wherein the total amount of oxygen-containing species present in said purge gas is from 1 ppb to 10 ppm by volume.
- 20 3. An apparatus as in claim 2, wherein the inert gas comprises helium, argon, nitrogen or a mixture thereof.
4. An apparatus according to claim 1, wherein said oxygen-containing species is selected from water, nitrogen oxide, alcohols, alkanones and ethers.
- 25 5. An apparatus according to claim 1, wherein said space is substantially evacuated, and wherein a total partial pressure of the oxygen-containing species in said space is from  $1 \times 10^{-4}$  Pa to 1 Pa.
- 30 6. An apparatus according to claim 1, which apparatus further comprises a further supply of electromagnetic radiation having a wavelength of 250nm or less and arranged to supply such radiation onto at least one of said optical component and said patterning structure.

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6. An apparatus according to claim 1, which apparatus further comprises a separate cleaning unit to clean patterning structure comprising a space, a radiation source for supplying and directing into said space radiation having wavelengths of 250 nm or less and a gas supply  
5 for supplying a purge gas into said space, wherein said purge gas comprises an oxygen-containing species selected from water, nitrogen oxide and oxygen-containing hydrocarbons.

7. A device manufacturing method comprising:  
projecting a patterned beam of radiation having a wavelength of 250nm or less onto a  
10 target portion of a layer of radiation-sensitive material on a substrate, and  
cleaning an optical component for use in the apparatus by irradiating a space containing said optical component with radiation having a wavelength of less than 250 nm in the presence of an oxygen-containing species selected from water, nitrogen oxide and oxygen-containing hydrocarbons.

15 8. A method according to claim 7, further comprising the step of supplying to said space containing said optical component and/or said patterning structure a purge gas comprising an inert gas, preferably helium, argon, nitrogen or a mixture thereof, and wherein the total amount of oxygen-containing species present in said purge gas is from 1 ppb to 10 ppm by  
20 volume.

9. A method according to claim 7, further comprising supplying to said space containing said optical component and/or said patterning structure a purge gas comprising oxygen-containing species selected from water, nitrogen oxide, alcohols, alkanones and  
25 ethers.

10. A method according to claim 7, wherein said cleaning step is carried out separately from said step of projecting the patterned beam of radiation.

30 11. A device manufactured according to the method of claim 7.

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